

AMENDMENT TO THE CLAIMS:

This listing of claims will replace all prior versions, and listing, of claims in the application:

1. (Previously Presented) An expanded polystyrene particle with a functional skin layer comprising:

- an inner expanded polystyrene layer; and
- a functional skin layer,

wherein the inner expanded polystyrene layer is formed by heating and expanding an expandable polystyrene bead or pellet, and the functional skin layer is formed by coating the surface of the inner expanded polystyrene layer with a functional coating composition having 10 to 99 wt% of a vinyl acetate based polymer and 0.1 to 90 wt% of at least one functional additive.

2. (Previously Presented) The expanded polystyrene particle with functional skin layer according to claim 1, wherein the vinyl acetate based polymer includes a vinylacetate homopolymer, or a copolymer of vinyl acetate and at least one monomer selected from a group of consisting of vinyl esters, acrylic esters, fumaric acid esters, carboxylic acids, vinyl alcohols, butadienes, caprolactones, and a mixture or a blend thereof, and

wherein the vinyl acetate based polymer has a degree of polymerization (DP) of 10 to 100,000.

3. (Previously Presented) The expanded polystyrene particle with functional skin layer according to claim 1, wherein the functional skin layer has a thickness corresponding to 0.003 to 10% of the overall diameter of the particle, and has 1 to 95 wt% of the total weight of the particle.

4. (Previously Presented) The expanded polystyrene particle according to claim 1, wherein the functional additive is selected from the group consisting of expanding agents, nucleating agents, lubricants, antioxidants, heat stabilizers, ultraviolet stabilizers, biostabilizers, fillers, reinforcing agents, plasticizers, colorants, impact-resistant agents, flame retardants, antistatic agents, crosslinking agents, fluorescent whitening agents, thermal conductivity-imparting agents, electrical conductivity-imparting agents, permeability modifiers, magnetism-imparting agents, surfactants, stabilizers, excipients, drugs, solvents, hardeners, desiccants, fortifying agents, flavoring agents, antibacterial agents, and mixtures thereof.

5. (Previously Presented) A functional expanded polystyrene molded product manufactured by molding the expanded polystyrene particle with functional skin layer according to claim 1.

6. (Previously Presented) A process for producing expanded polystyrene particles with functional skin layer, comprising:

heating and expanding expandable polystyrene beads or pellets to produce expanded polystyrene particles;

applying a functional coating composition to the surface of the expanded polystyrene particles, the functional coating composition being prepared by mixing or dissolving at least one functional additive with a vinyl acetate based polymer solution to form a functional skin layer; and

adding a release agent to the expanded polystyrene particles whose surface is coated with the functional coating composition, to separate the expanded polystyrene particles having the functional skin layer into individual particles, and drying the separated particles.

7. (Original) The process according to claim 6, wherein the solvent used to prepare the vinyl acetate based polymer solution is water, or an organic solvent selected from alcohols, esters, ketones, carboxylic acids, aromatics, and halogenated hydrocarbons, or mixtures thereof.

8. (Previously Presented) The process according to claim 6, wherein the vinyl acetate based polymer solution includes 3 to 80 wt% of a vinyl acetate based polymer based on the total weight of the vinyl acetate based polymer solution.

9. (Previously Presented) The process according to claim 6, wherein the release agent includes hydrophilic liquid materials having two or more hydroxyl groups (-OH) in their molecular structure, silicone oils, or mixtures thereof.

10. (Previously Presented) A process for manufacturing a functional expanded polystyrene molded product, comprising:

introducing the expanded polystyrene particles with functional skin layer produced by the process according to claim 6 into a steam molder;
applying high-pressure steam to the molder to bond the expanded polystyrene particles with functional skin layer to each other through their functional skin layer; and
cooling the bonded expanded polystyrene particles.

11. (Previously Presented) The expanded polystyrene particle with functional skin layer according to claim 2, wherein the vinyl esters includes vinyl caproate or vinyl stearate, the acrylic esters includes ethyl acrylate, butyl acrylate or octyl acrylate, the fumaric acid esters includes dibutyl maleate, the carboxylic acids includes maleic acid, acrylic acids, or itaconic acid.

12. (Currently Amended) The expanded polystyrene particle with functional skin layer according to claim 2, wherein the content of the vinyl acetate monomer in the vinyl acetate based polymer is 55mol% or more.

13. (Currently Amended) The process according to claim 9, wherein the hydrophilic liquid materials includes water, ethylene glycol or glycerin.

14. (New) The expanded polystyrene particle with functional skin layer according to claim 1, wherein the expanded polystyrene particle has the inner expanded polystyrene layer-the functional skin layer structure shown in figure 1.

15. (New) The expanded polystyrene particle with functional skin layer according to claim 1, wherein an interface between the inner expanded polystyrene layer and the functional skin layer has a structure shown in figure 2,